In the Claims (clean copy as amended)

1. (Amended) A plastid transformation and expression vector which comprises an expression cassette comprising as operably linked components, a 5' part of the plastid DNA sequence inclusive of the spacer sequence, a promoter operative in said plastids, a selectable marker sequence, at least one DNA sequence encoding at least a portion of an immunoglobulin mutimeric chain, at least one DNA sequence encoding a chaperonin, transcription termination region functional in said plastid and the 3' part of the plastid DNA sequence.

2. (Amended) The plastid transformation and expression vector of claim 1 wherein saidimmunoglobulin mutimeric chain comprises a heavy chain.

3. (Amended) The plastid transformation and expression vector of claim 1 wherein said immunoglobulin mutimeric chain comprises a light chain.

4. (Amended) The plastid transformation and expression vector of claim 1 wherein said immunoglobulin mutimeric chain comprises both a heavy and a light chain.

5. (Amended) The plastid transformation and expression vector of claim 1 wherein said immunoglobulin mutimeric chain comprises a single-chain variable fragment (scFv).

6. (Amended) The plastid transformation and expression vector of claim 1 wherein said immunoglobulin mutimeric chain comprises a heavy chain constant region fused to an operative ligand.

7. (Amended) The plastid transformation and expression vector of claim 4 wherein said heavy and light chains are separated by a linker comprising an intervening stop codon and a ribosome binding site.

8. CANCEL The plastid transformation and expression vector which comprises an expression cassette comprising as operably linked components, a 5' part plastid spacer sequence, a promoter operative in said plant cell plastids, a selectable marker sequence inclusive of the

space sequence, a J chain coding sequence, a transcription termination region functional in said cells and the 3' part of the plastid spacer sequence.

9. CANCEL A vector of claim 8 which comprises a secretory component with the J chain.

10. CANCEL A vector of claim 9 in which the secretory component and the J chain are separated by a linker which comprises an intervening stop codon and a ribosome binding site.

11. (Amended) The vector of claim 4 which further comprises a J chain and a secretory component, thereby producing secretory immunoglobulin A (SigA).

12. (Amended) The plastid transformation and expression vector of claim 1, wherein said 5' part of the plastid DNA sequence is a plastid flanking sequence, said promoter is a 16S rRNA promoter (Prm) driving said selectable marker sequence, wherein said selectable marker sequence is an aadA gene conferring resistance to spectinomycin, wherein said transcription termination region is a psbA 3' transcription termination region functional in plant cells, and a said 3' part of the plastid DNA sequence is a trnI gene, thereby defining the pLD vector.

13. (Amended) A composition comprising of polypeptide multimer and plant material, wherein said multimer comprises an immunologically active immunoglobulin mutimeric chain, molecule produced from a DNA sequence integrated into the genome of a plant plastid.

14. (Amended) The composition of claim 13 wherein said immunoglobulin mutimeric chain molecule is non-glycosylated.

15. (Amended) The composition of claim 13 wherein said DNA sequence comprises at least one sequence encoding a glycosylation signal sequence.

16. (Amended) The composition of claim 14 wherein said DNA sequence comprises at least one sequence encoding a glycosylation signal sequence.

17. (Amended) A composition comprising a polypeptide multimer and plant material, wherein said multimer comprises an immunologically active non-glycosylated immunoglobulin mutimeric chain molecule synthesized in a plant plastid.

18. (Amended) A plant plastid comprising a DNA sequence encoding an immunologically active miltimeric immunoglobulin mutimer chain molecule.

19. A plant cell comprising at least one plastid of claim 18.

20. A plant comprising at least one plastid of claim 18.

21. A plant plastid preparation comprising plastids of claim 18.

22. (Amended) A composition prepared from plant plastids of claim 18, said composition comprising a polypeptide multimer and plant material, wherein said multimer comprises an immunologically active non-glycosylated immunoglobulin mutimeric chain.

23. (Amended) The composition of claim 13 wherein said polypeptide multimer further comprises a J chain.

24. (Amended) The composition of claim 13 wherein said polypeptide multimer further comprises a secretory component.

25. (Amended) The composition of claim 13 wherein said polypeptide multimer further comprises a J chain and a secretory component.

26. (Amended) The composition of claim 17 wherein said polypeptide multimer further comprises a secretory component.

27. (Amended) The composition of claim 17 wherein said polypeptide multimer further comprises a J chain and secretory component.

28. (Amended) A method for introducing DNA encoding immunoglobulin mutimeric chain coding sequences into a plastid, said method comprising: introducing into a plant cell, a plastid expression vector adsorbed onto a microprojectile, said plastid expression vector comprising as operably linked components, a DNA sequence containing at least one plastid replication origin functional in a plastid, a transcriptional initiation region functional in a plastid, at least one heterologous DNA sequence encoding at least a portion of an immunoglobulin mutimeric chain, at least one DNA sequence encoding a chaperonin and a transcriptional termination region functional in said cells, whereby said heterologous DNA is introduced into a plastid in said plant cell.

29. (Amended) The method of claim 28 wherein said immunoglobulin mutimeric chain comprises a heavy chain.

30. (Amended) The method of claim 28 wherein said immunoglobulin mutimeric chain comprises a light chain.

31. (Amended) The method of claim 28 wherein said immunoglobulin mutimeric chain comprises both a heavy chain and a light chain.

32. (Amended) The method of claim 28 wherein said immunoglobulin mutimeric chain comprises a single-chain variable fragment (scFv).

33. (Amended) The method of claim 28 wherein said immunoglobulin mutimeric chain comprises a heavy chain constant region fused to an operative ligand.

34. The method of claim 28 wherein said plastid expression vector further comprises DNA sequences encoding a J chain.

35. The method of claim 28 wherein said plastid expression vector further comprises DNA sequences encoding a secretory component.

36. The method of claim 28 wherein said plastid expression vector further comprises DNA sequences encoding a J chain and a secretory component, thereby producing secretory immunoglobulin (SigA).

37. (Amended) A plastid transformation and expression vector which comprises an expression cassette comprising as operably linked components, a promoter operative in a plastid, a selectable marker sequence, immunoglobulin mutimeric chain coding sequences, a transcription termination region functional in a plastid.

38. (Amended) The plastid transformation and expression vector of claim 37 wherein the immunoglobulin mutimeric chains encoded by said immunoglobulin mutimeric chain coding sequences comprise heavy chains and light chains.

39. (Amended) The plastid transformation and expression vector of claim 38 wherein said immunoglobulin includes covalent bonding between the chains, and said immunoglobulin is immunologically active in the plastid.

40. (Amended) The plastid transformation and expression vector of claim 39 wherein the heavy and light chains of said encoded immunoglobulin are separated by a linker comprising an intervening stop codon and ribosome binding site.

41. (CANCEL) A plastid transformation and expression vector which comprises an expression cassette comprising an operably linked components, a promoter operative in plant cell plastids, a selectable marker, a J chain coding sequence, a transcription termination region functional in said cells.

42. (CANCEL) A vector of claim 41 which comprises a secretory component with the J chain.

43. (CANCEL) A vector of claim 42 which the secretory component and the J chain are separated by a linker which comprises an intervening stop codon and a ribosome binding site.

44. (Amended) The vector of claim 38 wherein said immunoglobulin mutimeric chain further comprises a J chain and a secretory component, thereby producing secretory immunoglobulin (SigA).

45. (Amended) The plastid transformation and expression vector of claim 44 wherein said light chains are four identical light chains, and said heavy chains are four chains.

46. (Amended) The plastid transformation and expression vector of claim 38 wherein said promoter is a 16S rRNA promoter (Prrn), said selectable marker sequence encodes the gene aadA, conferring resistance to spectinomycin, and said transcription termination region functional in a plastid is a psbA 3' region, thereby defining the pZS vector.

47. (Amended) A stably transformed plant which has been transformed by the vector of any one of claims 37 - 46.

48. The progeny, including but not limited to seeds, of the stably transformed plant of claim 47.

49. The plant of either one of claim 47 or claim 48, wherein the plant is tobacco.

50. (Amended) A universal plastid transformation and expression vector which comprises an expression cassette comprising as operably linked components, a 5' part of a plastid spacer sequence, a promoter operative in plastids, a selectable marker sequence, at least one DNA sequence encoding at least a portion of an immunioglobulin mutimeric chain, at least one DNA sequence encoding a chaperonin, a transcription termination region functional in plastids and a 3' part of a plastid spacer sequence, and flanking each side of the expression cassette, flanking DNA sequences which are homologous to DNA sequences inclusive of spacer sequences conserved in the plastid genome of different plant species, whereby stable integration of said immunoglobulin coding DNA sequence into a plastid genome of a target plant is facilitated through homologous recombination of said flanking DNA sequences with homologous sequences in the target plastid genome.